Welcome to this special broadcast from the Johns Hopkins Bloomberg School of Public Health. Thank you for joining us. I'm Josh Sharfstein, Vice Dean for Public Health Practice and Community Engagement. I'm also a pediatrician and host of our daily podcast, *Public Health On Call*.

Our topic today is the path reversing troubling trends in the COVID-19 pandemic. We are 11 months into this pandemic, and in the United States, and in many countries around the world, things are getting worse rather than better. Daily, new cases in the United States are continuing to hit, new record highs nationally, and in many states, positivity rates and testing are climbing. Some hospitals are full. And there are extra refrigerated trucks for the diseased waiting outside. And all this is happening as we approach the winter holidays and colder temperatures in many places.

We'll talk about these difficult topics, as well as the more promising news of highly effective vaccines with today's panel of experts. Dr. Amber D'Souza is a professor in the Department of Epidemiology at the Johns Hopkins Bloomberg School of Public Health, is an infectious disease epidemiologist, and her research interests include, risk communication and risk prevention.

Dr. David Dowdy is also an associate professor in the Department of Epidemiology here at the Bloomberg School. He is jointly trained in infectious disease epidemiology and internal medicine. And he practices medicine as a general internist. His research interests include, case detection and the dynamic of infectious disease transmission.

Dr. Caitlin Rivers is a senior scholar at the Johns Hopkins Center for Health Security, and an assistant professor in the Department of Environmental Health and Engineering here at the Johns Hopkins Bloomberg School of Public Health. Her research focuses on improving public health preparedness and response. She has been an author or contributor on a number of influential reports, that are guiding
many states in responding to COVID-19. In July, Dr. Rivers authored, *Resetting our Response: Genes Needed in the US Approach to COVID-19*, which we'll talk about today, because these recommendations remain relevant and important.

Our discussion today will include questions submitted from the audience and the media before the broadcast. Great. I'd like to start with you Dr. D'Souza. Tell us what is going on. We now have passed 250,000 people who have died from COVID-19 in the United States. What is going on around the country?

**AMBER D'SOUZA:** So the epidemic is uncontrolled currently in the US. Rates have never been this high. And it is now not just in a few areas, but throughout the country. We have increasing trends, so exponential growth in many areas across the country. And that's translating into the beginnings of hospital systems being overwhelmed. And of course, we're very worried about what will happen with the deaths, as the infections continue to spread.

**JOSH SHARFSTEIN:** What are the key numbers that you look at as you're judging the state of the pandemic in different parts of the country.

**AMBER D'SOUZA:** Yeah, great question. So of course, we look at how many people are infected. But we also need to look at some other important measures. So percent positivity is one marker we use, because it helps us understand how many people might not be getting tested. And we see right now, that a lot of states have a really high percent positivity, which suggests that there is a lot of spread in the community, if such a high proportion of people who are getting tested have the infection.

**JOSH SHARFSTEIN:** What about the delays in the numbers? In other words, you see a certain number of infections today, but that means there are other people who have been exposed who haven't yet come forward to get tested. When we have the numbers going up, do you believe that it suggests we're only seeing part of just how bad it is right now.

**AMBER D'SOUZA:** Yeah, it's a very scary time. If you look at the number of cases and how steep that increase has been over the past few weeks, we know that there is not enough testing in some places. And there are delays in getting those test results back, which all contribute to the infection spreading more. So when we see such stark increases, the question is, what can we do to get those numbers under control, and try to decrease the risk for everyone.
JOSH SHARFSTEIN: One last question for you, are there any misconceptions out there about what is happening in different parts of the country? Are there any myths you would like to clear up?

AMBER D'SOUZA: It's not too late, even now, even though the infection is not well controlled. There still is hope and measures we can do.

JOSH SHARFSTEIN: Great. And we're going to get to talking about those in just a second. But first, I want to turn to Dr. Dowdy. I'd like to ask you, where you think this is headed? We just heard from Dr. D'Souza. This is the worst it's been in the United States, in terms of the spread of the virus, that there are more cases out there than we're actually seeing. Where do you see this going in the next few weeks and months.

DAVID DOWDY: Well, I think unfortunately, in the next few weeks, things are going to get worse rather than better. Usually, there's about a three week lag between the time that we see cases and the time that we see deaths. And so we've seen an increase in the number of cases over the past two weeks of about 70% to 75% nationwide. And we can probably expect to see that number of increase in deaths over the next two to three weeks.

And so it's very likely that by the first couple of weeks in December, we're going to be back at seeing 2000 or more deaths per day here in the US, about the same levels we saw way back in April. It's hard to predict how things are going to go two or three months from now. But I think certainly, in the coming two, three, four weeks things are going to be getting worse before they get better.

JOSH SHARFSTEIN: We've seen stories about parts of the country where the health care system is really at its capacity. And patients are being moved elsewhere. They're calling in reserves of nurses from the military. Is this going to remain sporadic, or do you think this may spread to other places around the country?

DAVID DOWDY: Well, this really is an all hands on deck sort of situation. I think it is likely to spread beyond the few places that we see right now, maybe not to the entire country, but larger than what we're seeing at this present time. And I think it's going to be really important for us as a country to come together, figure out how we can reallocate resources from those places that have a slightly lower burden to it, to those that
really are completely maxed out.

**JOSH SHARFSTEIN:** Now, we know that we may be getting some very effective vaccines coming with wide distribution, maybe in about six months. Do you see this surge right now, as the big surge that the US has to face before times get better with the vaccine. Do you think this is not quite at that point yet?

**DAVID DOWDY:** I think it's quite possible that this is the final surge. But I think the key is to try and limit the damage that's done over the next two to three months, or more, until we have a vaccine. So we're kind of getting to the end stages of this first part of the pandemic. And hopefully, within a few months, we will have a vaccine that's ready for wide distribution. But a lot can happen in the next one to two months. And we need to do what we can today to limit that damage, while we wait for these vaccines to become available.

**JOSH SHARFSTEIN:** Got it. Well, let me turn to you, Dr. Rivers, because you have been working very intensely on the ideas that can be pursued in order to limit the damage that Dr. Dowdy is talking about. Tell us what's on your mind.

**CAITLIN RIVERS:** Because we are experiencing a widespread severe resurgence, I think the actions we should be taking right now really relate to pulling the emergency brake. In places that are experiencing widespread community transmission, and where hospitals are starting to come under strain, we need to look at closing high risk activities and settings. And that could include indoor dining, bars, gyms, the places where we know the virus spreads easily, because it's indoors, and because masks are not possible, or not often worn.

I think those are the steps we need to take to really get things under control. And then once we get things back in hand, we can look at the longer term measures that will allow us to live like this sustainably, which could include continuing to increase testing and personal protective equipment, making sure we have the capacities in place to control future surges if they do occur.

**JOSH SHARFSTEIN:** So thinking about those specific targeted recommendations, where additional restrictions may be needed. How do you recommend that places think about that? Is there at a certain threshold you would start to think about those, and how do you distinguish between high risk activities and activities that would be OK to continue.
CAITLIN RIVERS: The red alarm is if health care systems are starting to come under strain. That is a very serious situation that requires aggressive action. It's better though to put into place smaller restrictions earlier, so that you don't get to that point where hospitals are starting to come under stress, and where severe restrictions are really needed to avoid that outcome.

And so I recommend that places that are starting to see a resurgence, like New York and parts of New England, move quickly and make smaller moves. Places that are already at, or past the tipping point, I think more aggressive restrictions are required, which could include closing more of those high risk activities and settings.

Now, you asked what those are. I think generally, we understand them to be indoor dining, bars, gyms, maybe faith spaces, where people practice faith. What those settings are in each community is something that contact tracing can actually help to uncover. In the course of contact tracing, those tracers learn a lot about where people have been in the last few days, that may have contributed to their infection. And so that's a really important source of data for helping to target these restrictions as narrowly as possible, so that they don't have to be community wide closures.

JOSH SHARFSTEIN: I think one of the difficult issues in many communities, is that the contact tracing has not been scaled up to the point where they can answer that question. And so you have people who are owners of bars, saying, I don't see the data in my community that my bar has been the cause of a problem. So why should my hours be restricted, or why should I be closed? How do you recommend that localities address that kind of uncertainty?

CAITLIN RIVERS: Yeah, first to make the point that even if contact tracing is not able to reach everyone who is infected, which for many places is the case right now, it can still be a useful source of data on a subset of people who are infected. We can still learn a lot about trends.

Now, what I hear when I hear from business leaders that these kinds of restrictions are harmful. Absolutely, they're very hard to ignore, but what we don't want to happen is just set up the kind of situation where leaders, our elected leaders, are saying we can't close restaurants. We can't close bars, because it's hard on the
businesses. But also, you shouldn't go, because it's not safe. We need to make decisions that are in the best interest of public health, and in parallel, put in place the kinds of support that will keep businesses and families afloat during this difficult times. We don't want to end up in an unhappy middle, where we're not really meeting the needs of either community.

**JOSH SHARFSTEIN:** In part, I hear you saying that it's very important to be providing economic relief for the businesses that are affected by some of these restrictions.

**CAITLIN RIVERS:** Absolutely. People will not patronize businesses if they worry that it is not safe. And so leaving them open is not enough. I think regardless of what we do in terms of those restrictions, we need to be prepared to provide funding and support to businesses through this difficult time.

**JOSH SHARFSTEIN:** Got it. Well, thank you all for your initial comments. And I want to turn to some of the questions that we've been getting. We got well over 100 questions in advance for this webcast. So we're going to get through a bunch of them here. I'm going to point you first, Dr. Dowdy. Do you think that there should be a single set of rules applied nationally? Or if it is going to be on a place by place basis, how do you make sure that there is some consistency?

**DAVID DOWDY:** Well, I think as Dr. Rivers just mentioned, I think it's important to try and target our restrictions to those areas where transmission is the most intense. And so any data that we have to inform us as to where that transmission is occurring, I think it's important to act on. But we can target restrictions at a very fine geographic scale if necessary to add to the level of specific venues, or specific zip codes, et cetera. There's no need for a one size fits all and full lockdown of the entire country in order to reduce transmission to a tolerable level.

**JOSH SHARFSTEIN:** Now, let's say we're looking at an area on the map though, that does have a lot of transmission, and it's just really important that people pay attention for their own health, follow the best guidance, in order to protect themselves and their families. How do you go about inspiring people to do that, especially now, where there's so much disagreement, and at times, conflict even, on some of the restrictions that have been put into play?
DAVID DOWDY: Well, think that part of this is as was discussed just a few minutes ago, the importance of actually providing the supports that are needed for people to abide by these restrictions. Right, so if we're closing down venues, we need to provide them the financial support that they need to stay afloat. If we're telling people to stay home and with their families, again, we need to provide the structures for them where they're not going to lose their jobs, and they're going to be able to keep, again, themselves and their families afloat.

And I think at some point, we do have to have these restrictions in place, and we will have to enforce them. But I think that we in concert with enforcing those restrictions, we also need to give people and businesses the support they need to be able to comply and ride through this wave.

JOSH SHARFSTEIN: Got it. I want to turn to you, Dr. D'Souza. We got a number of questions about herd immunity and whether this big surge is going to generate herd immunity. Could you explain how you think about herd immunity, and how that fits into the response to this very difficult situation we're in right now?

AMBER D'SOUZA: Yeah, the idea of Herd immunity is that once enough people in a group have protection from the infection, either because they've had the infection and mounted their response, or because they've been vaccinated, then even if an individual themselves isn't protected yet, they're less likely to get exposed, because most of the other people in the group have been protected.

We're very, very far from that idea of herd immunity. You need the majority of people to be protected. And of course, how does the epidemic end? It ends with us getting to a point where either worst case scenario, this infection runs through and infects so many of us, which of course we want to avoid. Or we hold out, we keep numbers down, until we're vaccinated. And once the majority of people are vaccinated, the transmission will begin to slow. Because more and more people will be protected.

JOSH SHARFSTEIN: In other words, our goal is to achieve a immunity in our population through the vaccine, and not because so many people have gotten sick and died.

AMBER D'SOUZA: Exactly. We want to be active in our prevention. And so letting this run rampant, and a lot can happen in these next few months, if we do not reverse the trends. The way
they're going now, a lot of people could become sick, and be really, really ill. And again, we're very worried, not just about the deaths, but about the long term health consequences that many people who get these infections suffer.

So we already see so many people who are affected, and with the way trends are going, there could be really a lot more people over the next six months before vaccination might really be at the levels that we need to begin seeing protection. It's going to take many, many months from now before we have the vaccines approved and deployed. So we still have a long, long way to go.

JOSH SHARFSTEIN:

So while you're on that point, I just mentioned, we did get a number of questions about the vaccines. We have two vaccines where the companies have come out and released information that they believe they are more than 90% effective in reducing the chance that people will get COVID-19. And we heard that one company, Pfizer, is preparing a submission to the Food and Drug Administration. A lot of questions sort of about what happens after that.

And I can say that what I expect to happen, is a review at the Food and Drug Administration, which will include the convening of an independent advisory committee to review the data. The FDA, if everything looks good, will provide its explanation of how it sees the data, and then issue an emergency use authorization. I would also expect the CDC to convene a committee to look at the specifics of the data and determine well, who should get the first doses.

It was I think, smart for the government and the companies to start making the vaccine, not even knowing whether it would be safe and effective. If it turned out the trials were negative, they were just going to throw out the vaccine. But if it looks good, which it does, and the vaccines get authorized, then there will be millions of doses we understand, even by the end of this year. And production will continue into next year to vaccinate a large proportion of the population. It may be into the spring and summer, when enough doses can be distributed.

So that is the bridge we're trying to build between now and that time when we have a lot of [INAUDIBLE] of effective and safe vaccines to use to generate the herd immunity, the population immunity, that Dr. D'Souza is talking about. I guess, one question I have for you, Dr. Dowdy, is as the vaccine comes out, what do things look
like between the start of vaccination and the point that we really do get to a much better place, in terms of the number of people who are vaccinated and immune. Like, what does that look like between now and say, a year from now?

DAVID DOWDY: That's a great question, Josh. And as you were suggesting, this is going to be a gradual process. It's not like suddenly we wake up one day and everyone can get a vaccine we're going to have to prioritize the doses, the first doses that come out, to those who need it the most. So for example, health care workers, people who are working with residents of long term care facilities, et cetera.

And it is going to be a number of months before we have enough doses of vaccine to where anyone who wants it can just go to the local Walgreens or CBS and get a dose. In that time. It's also important to recognize that at least the vaccines that have been pushed forward first, are both multi dose vaccine. So you need two doses before you have full immunity.

In that time, this virus is not going to be taking a break, right. So it's going to continue to circulate in our community. And we're going to continue to need to take measures to prevent that transmission. So I don't think that we're going to be waking up on New Year's day 2021, suddenly free of this pandemic, and going back to life as normal. We need to prepare that while this vaccine is being distributed, we will see numbers hopefully, slowly going down. But we'll need to remain vigilant for quite a while as we get this vaccine scaled up and distributed to everyone who needs it.

JOSH SHARFSTEIN: So for individuals, that means we're still wearing masks.

DAVID DOWDY: Yes, still wearing masks, still avoiding large indoor gatherings, still maintaining distance from other people. Yes, so all the same precautions that we're taking now will need to continue for a while.

JOSH SHARFSTEIN: Got it. I want to go back to Dr. Rivers, and ask a question that came in from several sources, having to do with school. You know, initially there was a lot of concern that schools would actually perpetuate transmission, like for influenza, where schools are a source of a lot of community infections. That hasn't proven to be the case as much for coronavirus compared to flu. What do you think in this very difficult period
we're entering now, what is the best approach to thinking about school?

**CAITLIN RIVERS:** We know that in places with reasonable levels of community transmission, that schools can be made safe through mitigation measures. And so I think it should be our priority to get kids back in the classroom as soon as possible, when the public health conditions are amenable to that. Right now, many if not most, children are learning from home. And so what districts are starting to do now, is look ahead to the spring semester, look ahead to the March, April time frame, and try to anticipate where we will be, and what building blocks they need to put in place now to make that possible come spring.

We know the school closures are very hard on children, particularly young children. And that schools are an important source of support. Not just for learning, but also for wraparound services, like access to nutrition and medical care. And so finding ways to make schools safe to operate, I think, should be our absolute top national priority.

**JOSH SHARFSTEIN:** And so would you say that it is reasonable for communities to be say, limiting the hours, or closing bars and restaurants, while trying to preserve schools, particularly, for younger children, who appear to have even lower risk of getting infected and passing on the virus.

**CAITLIN RIVERS:** And I do think that is an area where we could do better. We know that we cannot have everything all the way open, because it is just too easy for the virus to spread. And so I do think communities should take a strategic look at what they want and can have open, so that other things must remain closed, so that the priority places can remain open. And school for young children, I think, needs to be one of those top priorities.

**JOSH SHARFSTEIN:** This is something that Europe has done, prioritize school. Are there other lessons, Dr. Rivers, that we can take from the European experience. Their surge started a little bit ahead of ours. They're a few weeks in. Different countries have taken different measures. How do you look at that?

**CAITLIN RIVERS:** One persistent lesson throughout this pandemic, is that places that act earlier have better outcomes, and are able to gain more flexibility down the road. So the
investments we make now in public health interventions really pay returns. Now, Europe did recently experience a very severe resurgence. So it looked a lot like ours, actually. And many countries in Europe decided to go into something like a lockdown, although it was more targeted and nuanced than the spring closures were. And they have since turned the corner. So it is very evident that the restrictions they put in place largely worked.

I think that should be a lesson for us. That if we do put in place restrictions, they will work, and they can help to prevent health care systems from becoming overwhelmed. I know that's one of the factors that really feeds into the decision making of governors and elected leaders. This is going to be really costly. Is it worth it? And I think from Europe, we can say that it is. And that we can do it in a more targeted way than we did in the spring.

**JOSH SHARFSTEIN:** Got it. So when people hear about, sometimes, you read articles lock downs in Europe. They're not really the lock downs that they had at the beginning, or that we had at the beginning.

**CAITLIN RIVERS:** No. And in spring in Spain, for example, they had a lockdown, and it was very strict. People were not really even allowed to spend time outdoors. We don't need to go back to that kind of restrictions, which we did not actually really even have in the United States. But we don't need to even have that on the table. We can do this in a more nuanced way, but we do need to take those steps to start to slow transmission and turn the corner.

**JOSH SHARFSTEIN:** Got it. Now, Dr. D'Souza, there's some people who may be listening to this advice and saying, you know, we've heard this before. Every time we hear a podcast or a webcast from people in public health, they're saying that we have to do more. We have to do more. When does it end? How do you think about communicating and expressing the view that this really is a moment to do more?

**AMBER D'SOUZA:** Yeah, we get COVID fatigue. It has been a long, hard slog for all of us. But this is code red. No matter which of the data and the metrics you look at, this is the most serious part of the epidemic. We've already paid such a toll economically, socially, and in health as a country. And there is hope. There is great news, you know, about the potential of these vaccines.
So this is such a moment, and a need for us to rally and do this smartly, and save lives over this winter. Because if we hold out, it can make a tremendous difference this winter. This really is the moment to pull things in. Because the way infectious diseases work, it is exponential. We will see cases continue to double every few weeks, until we get this under control. But we can do it.

**JOSH**

So in other words, the life you save may be your own.

**SHARFSTEIN:**

**AMBER D'SOUZA:**
Yes, your own, and your neighbors, and your friends, and the people you don't know that you still should care about.

**JOSH**

Right. We're now heading into the holiday season. And this is a time where traditionally, you the most travel days of the year, people love getting together. I know my family always gets together around Thanksgiving and the holidays. So I'm going to ask you all, what are you doing this year? I'll start with you, Dr. D'Souza.

**AMBER D'SOUZA:**
We are doing a Zoom Thanksgiving with our family, two actually, with different parts of the family. And then over the holidays, my family and one other household of family members are getting together in a very small two household celebration.

**JOSH**

Dr. Dowdy?

**SHARFSTEIN:**

**DAVID DOWDY:** Yes, so it's similar for me. Usually, the holidays are time for a big gathering of our family, often 20, 25 people or more, all together. This year, we've decided that we're going to have that large gathering by Zoom. And we'll each have small clusters of our own immediate family. So my mom's going to come up. And we'll have one more person in our house, but that's going to be it. And we will look forward to next year, when we can get back as a large family again.

**JOSH**

Thank you, Dr. Rivers.

**SHARFSTEIN:**

**CAITLIN RIVERS:**
For the holidays, for me as well, it's just not the year to get together. The risks are too great. And so we will be keeping it in the household.
JOSH SHARFSTEIN: Well, same for us. My parents live across town, but we will be having a Zoom Thanksgiving with them. But we are really looking forward to the time, which I don't think it's in the very distant future, when we will be able to get together fully vaccinated. So with that, thank you. I want to thank our experts for joining us today, and all of you for watching.

This webcast is just one of the many ways Johns Hopkins University faculty are sharing their knowledge on COVID-19 pandemic. You can find expertise from across our university, including our map dashboard and data center, with all the most important trends and daily data at coronavirus.jhu.edu. And we at the School of Public Health, have a daily podcast called Public Health on Call, where we are having conversations with experts every day. And all three of these experts have been featured on the podcast, Please subscribe wherever you get your podcasts. Or visit jhsph.edu/covid19.

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